

Bachelor programmes

Bachelor programme in Biotechnology

Academic unit	Coimbra College of Agriculture (ESAC-IPC)
Type	Undergraduate Major Program
Level of qualification	Level 6. First Cycle (Bachelor's Degree) Program. 30 ECTS/semester during 3 years
Qualification awarded	The students who successfully complete the program are awarded the degree of Bachelor of Science (B.S.) in Bachelor Programme in Biotechnology
Mode of study	Full-Time
Admission requirements and recognition of prior learning	<p>Foreign European Union citizens who wish to enrol in ESAC-IPC undergraduate degree programmes may apply:</p> <ul style="list-style-type: none"> (a) Through a national contest; (b) Students already enrolled in a foreign Higher Education Institution may ask for transfer during an annual application period, with recognition of prior learning. <p>Non EU citizens who wish to enrol in ESAC-IPC undergraduate degree programmes must apply via the annual application for International Students, using one of the following:</p> <ul style="list-style-type: none"> (a) Those with a qualification giving access to Higher Education, meaning any diploma or certificate issued by a competent authority in the country in which it was awarded can apply directly to the desired bachelor degree; (b) Those or a Diploma of Portuguese secondary school or equivalent degree must apply for the specific ESAC-IPC bachelor degree exams (www.esac.pt); <p>More information on how to apply for the Portuguese first-cycle bachelor programmes: Study in Portugal website.</p>
Qualification requirements	The undergraduate students in this program must be successful in all the courses with a minimum achievement grade of 10, including their compulsory traineeship, and must have completed at least 180 ECTS credits.
Profile of the programme	Coimbra College of Agriculture offers both undergraduate and graduate programs on Biotechnology. There are courses mainly on the biological, chemical, and physical principles related to the structure and functions of organisms at the molecular and cellular level. Research opportunities exist in a variety of areas, including molecular biology, genetics, biotechnology, and biochemistry. Our main target is to prepare students for careers in research and teaching in university, and for various positions in biotechnology, food and drug industry, agriculture, forestry, and health.
Occupational profiles of graduates	Graduates will be employed in national and foreign academic institutions, molecular biology and related fields, a variety of private companies engaged in the distribution of supplies and equipment positions in pharmaceutical companies and biotechnology research and production institutions.
Access to graduate studies	The graduates of this program can apply to master programs to enhance their academic skills and career. The master program in Biotechnology is a continuity of the bachelor program in Biotechnology
Examination regulations, assessment and grading	<p>Assessment of success</p> <p>Assessment of success in a course may be carried out by a) continuous evaluation or b) exam. The students which do not achieve success during continuous evaluation are admitted to the exam if their presence is $\geq 75\%$.</p> <p>Achievement grade</p> <p>Grades are given in an absolute system scoring 0 to 20. Scores 0 to 9 indicate that the student was unsuccessful in a course (fail). Scores 10 to 20 indicate that the student was successful in a course (pass).</p> <p>Continuous evaluation, final, resit and graduation exams</p> <p>(1) All courses contemplate continuous evaluation, which may be carried out in different ways specified in the respective Course Datasheet.</p> <ul style="list-style-type: none"> a) Assessment by modules: each module is given a percentage contribution to the final grade. The student passes only if the grade for each module is ≥ 7.5 and the final grade of the course is ≥ 9.5. The failed module(s) may be assessed in the final and/or resit exams or the student may choose to assess the whole subject of the course; b) When the course is not divided in modules, the student passes if the final grade of the course is ≥ 9.5. The contribution of each evaluation item for the final grade is specified in the Course Datasheet. The complete subject of a failed course must be assessed in the final and/or resit exams. <p>(2) Final exams: may assess one or more course modules or the whole course.</p> <p>(3) Resit exams: are the final opportunity for a student to pass a course in a given academic year and are subject to prior registration and fee payment at the Academic Services. The resit exams may assess one or more course modules or the whole course.</p> <p>(4) Graduation exams: available to finalist students with, at the most, three failed courses to fulfil the bachelor program requirements.</p>

Curriculum

Code	Title	L	LP	Lab	TG	ECTS
1st year – 1st (Fall) Semester						
8810020	Biology I		52		8	6
8810022	Chemistry and biochemistry I	30		30	9	6
8810023	Physics I		45		7	6
8810029	Numerical methods and programming	22.5	37.5		9	6
2011001	Introduction to biotechnology		45		7	3
2011002	Technical-scientific English and communication		45		7	3
1st year – 2nd (Spring) Semester						
8810021	Mathematical analysis	22.5	37.5		9	6
8810024	Biology II		52		8	6
8810025	Chemistry and biochemistry II	30		30	9	6
8810027	Physics I		45		7	6
2012002	Physiology and plant production		38		6	3
2012003	Fundamentals of bioprocesses		15	30	7	3
2nd year – 3rd (Fall) Semester						
2021001	Instrumental analysis	30		38	6	5
2021003	Genetics		45		7	5
2021004	Molecular biology	30		38	6	5
2021007	Anatomy, physiology and animal histology	15		38	6	5
2021008	Technological laboratory	15		38	6	5
8810028	Statistics		45		7	5
2nd year – 4th (Spring) Semester						
2022002	Genetic engineering	30		38	6	5
2022003	Applied microbiology	15		38	6	5
2022004	Immunology	15		38	6	5
2022007	Enzyme technology	15		38	6	4
2022008	Culture of animal cells	15		30	3	3
2022009	Culture of plant cells	15		30	3	3
Elective course 1:						
2022101	Cell physiology		45		7	5
(ISEC)	Bioengineering materials science		45		7	5
(ISEC)	Water pollution and waste water treatment		45		7	5
(ESTeSC)	Clinical-laboratory biochemistry II		45		7	5
(ESTeSC)	Embryology and histology		45		7	5
(ESTeSC)	Laboratory methods and techniques		45		7	5
1032201	Physical and chemical food analyses		45		7	5
1032202	Sensorial analysis		52.5		8.5	5
1072202	Aquatic and terrestrial ecology		45		7	5
3rd year – 5th (Fall) Semester						
2031101	Unit Operations in Biotechnology	15	30	15	7	5
2031002	Enterprise management and entrepreneurship		60		9	5
2031003	Animal biotechnology		45		7	5
2031004	Plant biotechnology		45		7	5
2022001	Biochemical engineering	15	15	30	7	5
Elective course 2:						
2031101	Biotechnology and Biorefinery	15	30		5	5
(ISEC)	Laboratory of Biological Technologies		60		9	5
(ESTeSC)	Clinical-laboratory biochemistry I	30		30	5	5
1033104	Facilities, equipment and instrumentation		45		6.5	5
1033106	Industrial planning		52.5		9	5
1073103	Environmental and quality certification		45		7	5

NOTES:

L=Lecture; LP=Lecture-Practical; Lab=Laboratory; TG=Tutorial guidance. A semester has typically a duration of 15 class weeks

Bachelor degree in Biotechnology

3 rd year – 6 th (Spring) Semester						
Code	Title	L	LP	Lab	TG	ECTS
2032002	Project analysis and organization	15	30		5	3
2032003	Environmental biotechnology	15	30		5	3
2032004	Food biotechnology	15	30		5	3
2032006	Fermentation technology	15	30		5	3
Elective course 3:						
8810008	Energy and environment	15	30		5	3
2032101	Innovation management	15	30		5	3
2032102	Sociology of organizations	15	30		5	3
2032201	English for academic writing		45		7	3
2032202	Cell metabolism and bioenergetics		45		7	3
1033203	Nutrition and dietetics		28		4	3
1033205	Project		48		7	3
2032005	Traineeship		350		50	15

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